

REMARKS

Claims 1-13 and 15-19 are now pending in this application for which applicants seek reconsideration.

Amendment

Claims 1-13 and 15-19 have been amended to improve their clarity. Specifically, independent claims 1 and 4-7 now positively define a first sound signal for a first sound beam and a second sound beam for a second sound beam, and a first delay circuit for the first sound signal and a second delay circuit for the second sound signal. Moreover, these claims now define that the directivity control circuit controls the delay setting for each of the first and second delay circuits based on a desired focal position of each of the first and second sound beams to be directed to and a position of each of the plurality of speaker units, to emit the first sound beam from the plurality of speaker units in a first directivity and to emit the second sound beam from the plurality of speaker units in a second directivity different from the first directivity. No new matter has been introduced.

Art Rejection

Claims 1, 4, 6, 15, 16, and 18 were rejected under 35 U.S.C. § 102(e) as anticipated by Yoshino (USP 7,054,448). Claims 2 and 3 were rejected under 35 U.S.C. § 103(a) as unpatentable over Yoshino in view of Yeap (USP 4,118,601). Claims 5 and 17 were rejected under § 103(a) as unpatentable over Yoshino in view of Grimani (USP 6,498,852). Lastly, claims 7-13 and 19 were rejected under § 103(a) as unpatentable over Yoshino in view of Aylward (USP 6,240,189).

In the last reply, applicants traversed the above art rejections on the ground that Yoshino does not disclose an array speaker unit, but rather a conventional speaker setup as illustrated in Fig. 6. Specifically, applicants explained that in Yoshino each speaker receives a discrete dedicated signal from one of SPFL, SPFR, SPC, SPRL, SPRR, SPWF, SPSBL, and SPSBR, whereas the claimed invention calls for outputting all sound signals to all of the array of speakers, while using delays to create sound beams.

In response, the examiner asserts that an array speaker unit merely means multiple speakers arranged in a certain plane/surface, which covers front left and front right speakers 6FL, 6FR or the rear left and rear right speakers 6RL, 6RR.

Applicants also traversed the above art rejections on the ground that Yoshino does not disclose the claimed delay circuit configuration. Specifically, applicants explained that in

Yoshino each speaker has an associated dedicated delay circuit, whereas the claimed invention calls for providing a delay circuit for each sound signal (e.g., channel), and that the sound signals from all the channels are output to all the speakers.

In response, the examiner merely asserts that in Yoshino, the delay circuits are configured so that all the signal channels reach the listener simultaneously. Clearly, the examiner has not addressed the issue raised by the examiner, perhaps because the examiner is construing the claims differently than what applicants intended. Each of the pending independent claims now calls for a directivity control circuit that controls the delay setting for each of the first and second delay circuits based on a desired focal position of each of the first and second sound beams to be directed to and a position of each of the plurality of speaker units, to emit the first sound beam from the plurality of speaker units in a first directivity and to emit the second sound beam from the plurality of speaker units in a second directivity different from the first directivity.

In other words, the independent claims now positively recite that the first sound beam is emitted from the plurality of speaker units in a first directivity and that the second sound beam is also emitted from the plurality of speaker units in a second directivity. That is, each of the first and second signals (e.g., ch0, ch1) is output to the plurality of speaker units 7-1 to 7-n to emit the first and second sound beams.

As previously explained, in Yoshino, each speaker has an associated dedicated delay circuit, whereas the claimed invention calls for providing a first delay circuit for the first sound signal that is output to all the speakers. See Figs. 2, 6, etc., of the present disclosure, where each of the delay circuits 1, 3 for signals 0, 1 outputs to all the speakers 7-1 to 7-n instead to only a single dedicated speaker. In Yoshino, each of the sound signals SPFL, SPFR, SPC, SPRL, SPRR, SPWF, SPSBL, and SPSBR is output to only a single dedicated speaker rather than to a plurality of speakers. In this respect, the first or second sound beam emitted from the first or second sound signal is not produced by a plurality of speakers, but rather by a single speaker. In this respect, Yoshino would not have taught producing a sound beam from a single signal using a plurality of speakers.

Applicants submit that none of the other applied references would have alleviated Yoshino's shortcomings noted above.

Conclusion

For the foregoing reasons, applicants submit that the pending claims are in condition for allowance. Should the examiner have any issues concerning this reply or any other outstanding issues remaining in this application, applicants urge the examiner to contact the undersigned to expedite prosecution.

Respectfully submitted,

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